

layer.

4 The method of claim 2, wherein the fibroblast growth factor is basic fibroblast growth factor.

5. The method of claim 4, wherein the fibroblast growth factor is human basic fibroblast growth factor which has been produced from a recombinant gene.

6. The method of claim 2, wherein the primate embryonic stem cells are human embryonic stem cells.

7. The method of claim 2, wherein said culturing step includes the embryonic stem cells proliferating in culture for over one month while maintaining the potential of the stem cells to differentiate into derivatives of endoderm, mesoderm, and ectoderm tissues, and while maintaining the karyotype of the stem cells.

8. The method of claim 2, wherein the human basic fibroblast growth factor is present in the culture in a concentration of at least .1 ng/ml for at least a portion of the method.

9. A method of culturing primate embryonic stem cells, comprising:
culturing the stem cells in a culture essentially free of mammalian fetal serum and in the presence of a growth factor capable of activating a fibroblast growth factor signaling receptor, wherein the growth factor is supplied from a source other than just a fibroblast feeder layer.

10. The method of claim 9, wherein the culture is essentially free of any animal serum.

11. The method of claim 10, wherein the culture also comprises a fibroblast feeder layer.

12. The method of claim 10, wherein the primate embryonic stem cells are human

embryonic stem cells.

13. The method of claim 10, wherein said culturing step includes the embryonic stem cells proliferating in culture for over one month while maintaining the potential of the stem cells to differentiate into derivatives of endoderm, mesoderm, and ectoderm tissues, and while maintaining the karyotype of the stem cells.

14. (Amended) A culture system for culturing primate embryonic stem cells, comprising:

a fibroblast feeder layer; and

fibroblast growth factor supplied by other than just the fibroblast layer;

wherein the culture system is [essentially] free of added animal serum.

Sub 6 → 17. (New) A method of culturing primate embryonic stem cells, comprising:
culturing the primate embryonic stem cells in a culture free of added mammalian fetal serum and in the presence of fibroblast growth factor that is supplied from a source other than just a fibroblast feeder layer.